Acton Sewers: An Informational Guide for FY2023

September 12, 2022

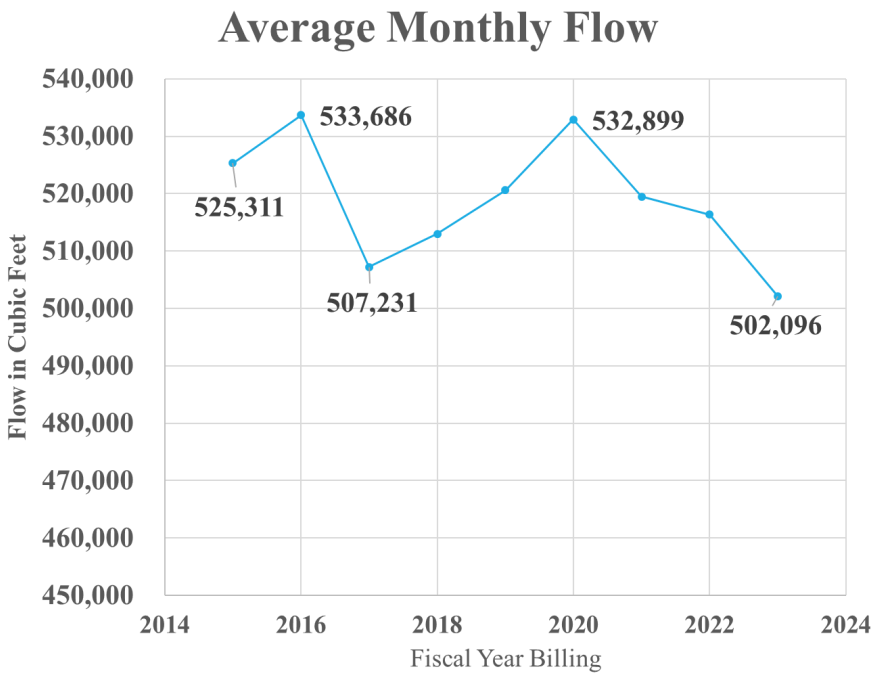
Annual Sewer Rate Recommendation

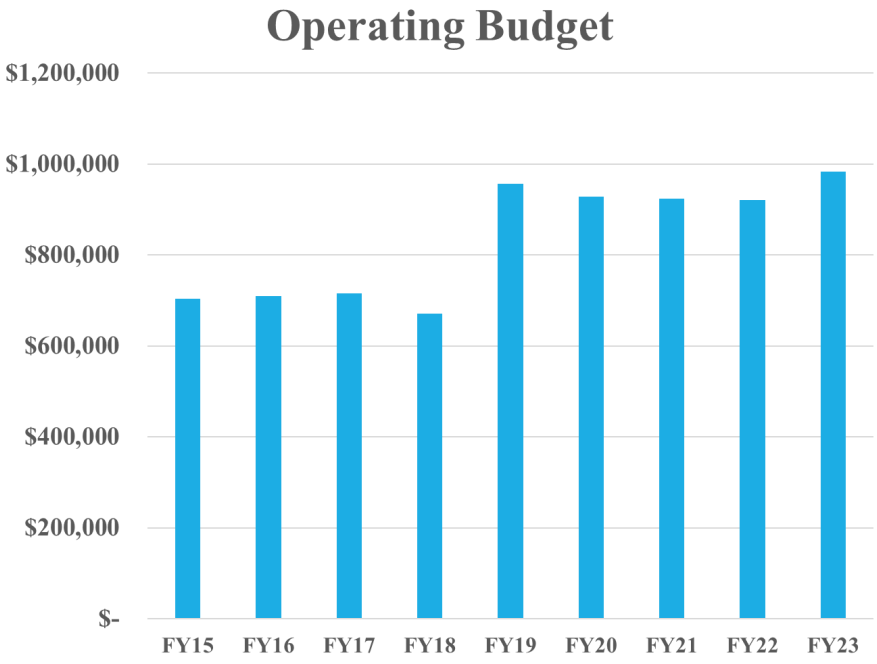
The Finance Department reviews **annual flows** and **budgeted costs** for the upcoming fiscal year, then issues a rate recommendation to the Sewer Commissioners for approval.

Below are some observations taken into account when considering a rate increase:

Water Flows

- **FY23 billing flows (Winter 2021 water usage) are down 2.5% from the prior year**
- **General downward trend as residents use less water and homes become more efficient**



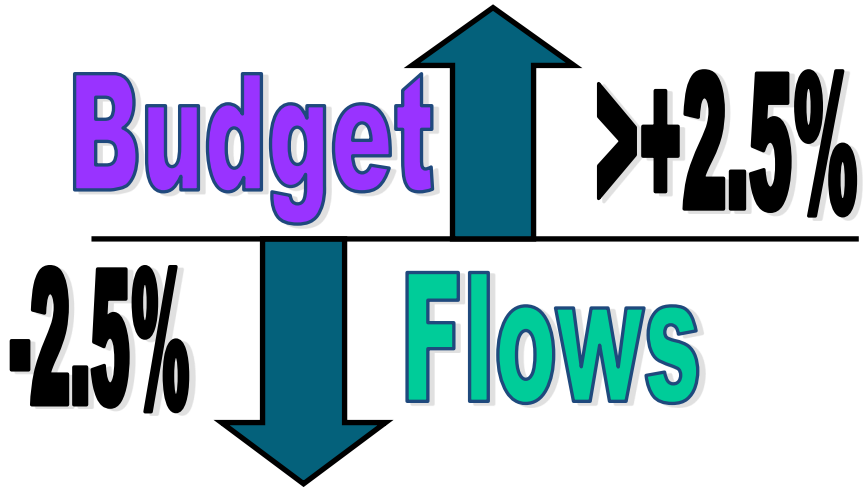


Operating Costs

- **FY23 operating budget is up 6.8% from FY22**
- **Increasing costs due to inflation, utilities, and supply costs**
- **Inflow and Infiltration (I&I) and PFAS testing initiatives**

FY23 Sewer Rate Recommendation

Residential:	$ .1393 / cubic foot
Commercial:	$ .1981 / cubic foot
School:	$ .1981 / cubic foot



5% Rate Increase

Helps to offset increased costs and decreased water flows

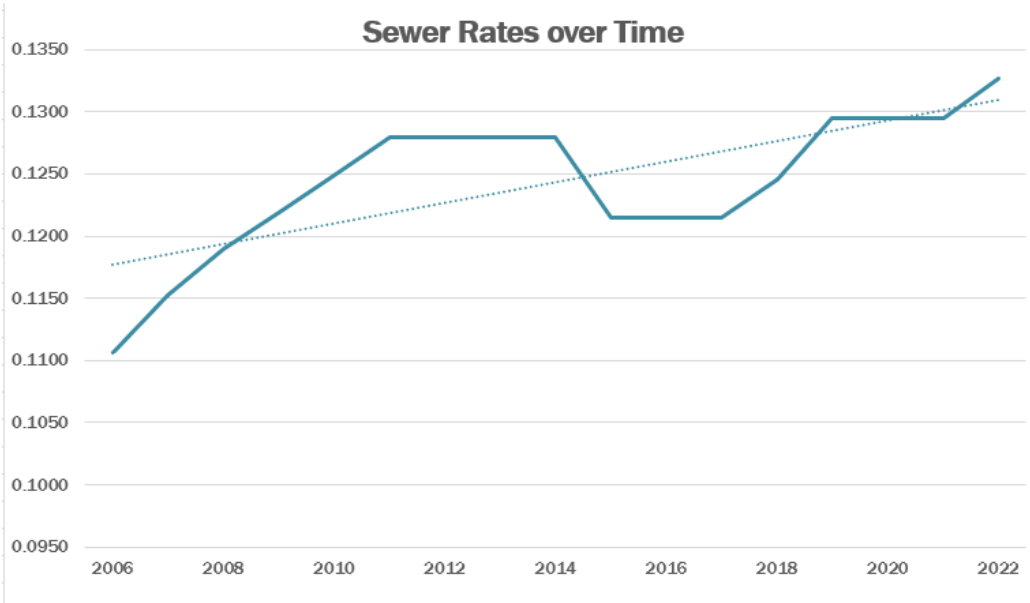
Anticipated $43,030 in additional revenue at no additional cost to the average residential sewer customer

Represents uniform 5% increase from FY22

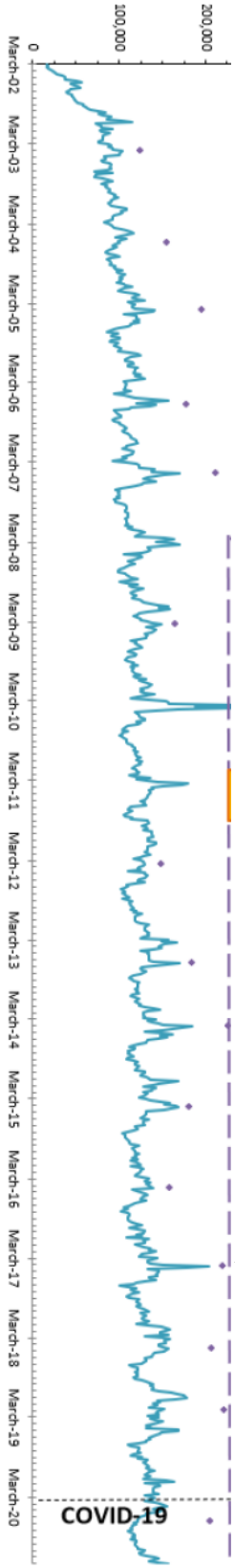
How do Acton's sewer rates compare to other communities in the State?

The data shown plots the annual sewer costs of several Massachusetts communities as reported in 2017. As reflected, Acton's rates rank on the higher end of the median range. Since Acton has not implemented any significant rate increases since 2017, it's probable that Acton's annual costs may currently fall closer to the median.

This figure shows how sewer rates have changed over time. Rates increased by 4% in FY2019 to cover equipment repair and servicing costs, not at all for FY20 and FY21 during the pandemic, and by 2.5% in FY22 to cover recurring operational expenses.



Inflow & Infiltration (I/I)



I/I: excess water which enters the sewer system through groundwater and stormwater, generally through faults in sewer pipes, joints, and connections

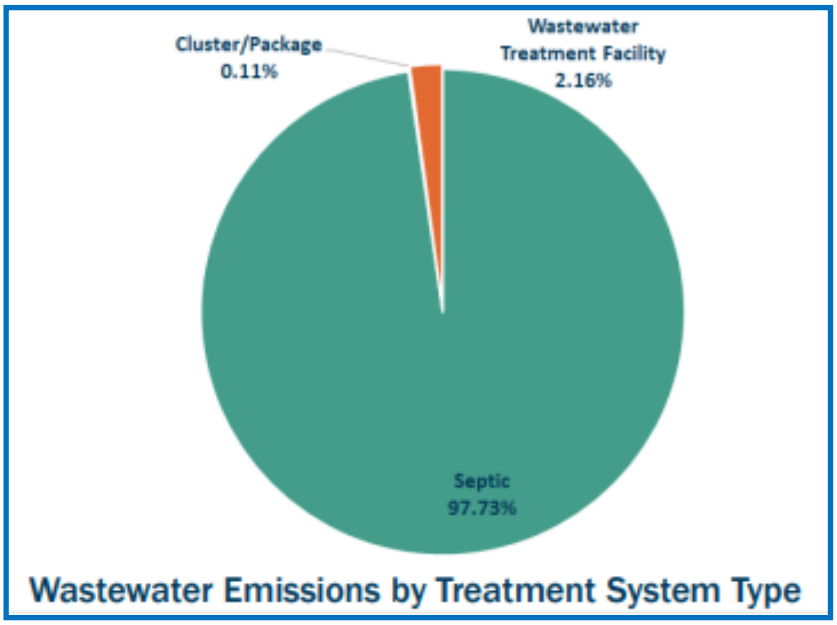
Certain levels are tolerable, but excess I/I can reduce overall system capacity and increase costs.

The Wastewater Treatment Facility regularly monitors pump station activity and flows into the facility so that it can respond to any problems accordingly. Flow monitoring and system repairs qualify as routine maintenance at the facility.

Peaks in flows can be indicative of increased I/I. Removing I/I can regain lost facility capacity .

Full understanding of regained capacity following I/I removal can be difficult to quantify without years of post-rehabilitation flow monitoring.

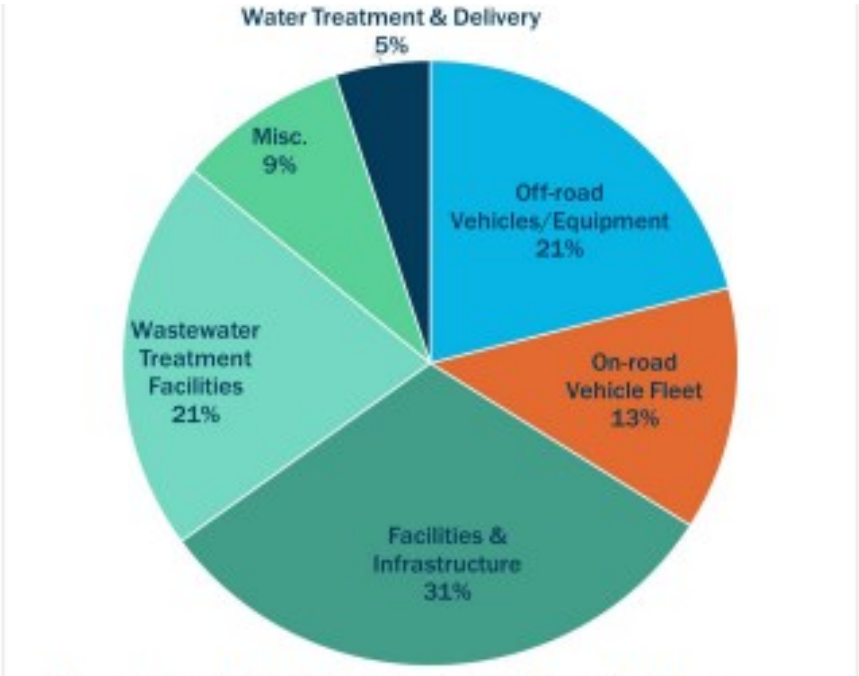
Sewers and the Environment



Wastewater Emissions by Treatment System Type

Though only 10% of Acton parcels utilize sewer, septic systems account for nearly 98% of Acton's wastewater emissions.

Wastewater treatment currently accounts for 21% of Acton's total municipal greenhouse gas emissions



Municipal GHG Emissions Breakdown

Sewers and the Environment continued.

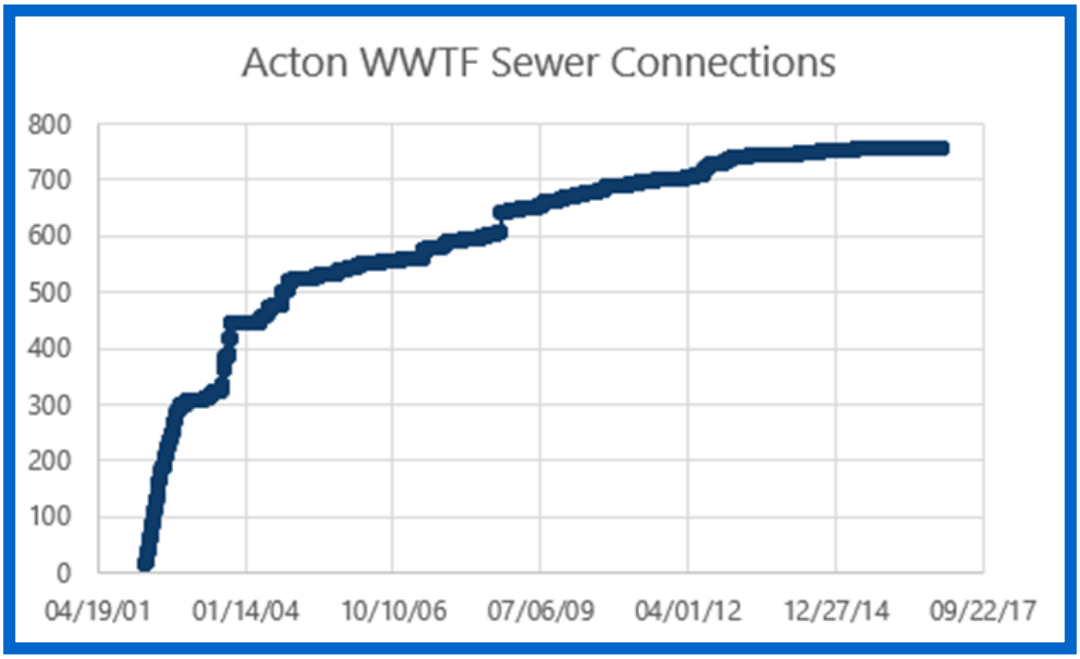
- The WWTP is continuously monitored for faults/failures by staff
- WWTP removes **solids, nitrogen**, **phosphorous**, and **bacteria,** then discharges higher quality effluent.
- Prevents direct discharge into groundwater
- Lower greenhouse gas emissions per household compared to septic
    - As of September 2022, WWTF and pumping sites will be enrolled in Acton Power Choice Green, meaning that all its electricity will come from 100% renewable sources
    - Increasing electrification of facility
    - Facility electricity costs largely offset by solar credits generated at other Town of Acton properties

→ Annual GHG Emissions:

- Septic: 267 lbs CO_2e / person (methane emissions)
- Sewer: 273* lbs CO_2e / person *(carbon offsets may reduce this to 68 CO_2e; electrification of the heating and cooling system would reduce this to 47 CO_2e)*
    - Based on the following (Cadmus):
        - Electricity: 205 lbs CO_2e / person (222 $MTCO_2e$)
        - Fuel Oil: 21 lbs CO_2e / person (22 $MTCO_2e$)
        - Process Emissions: 47 lbs CO_2e / person (51 $MTCO_2e$)

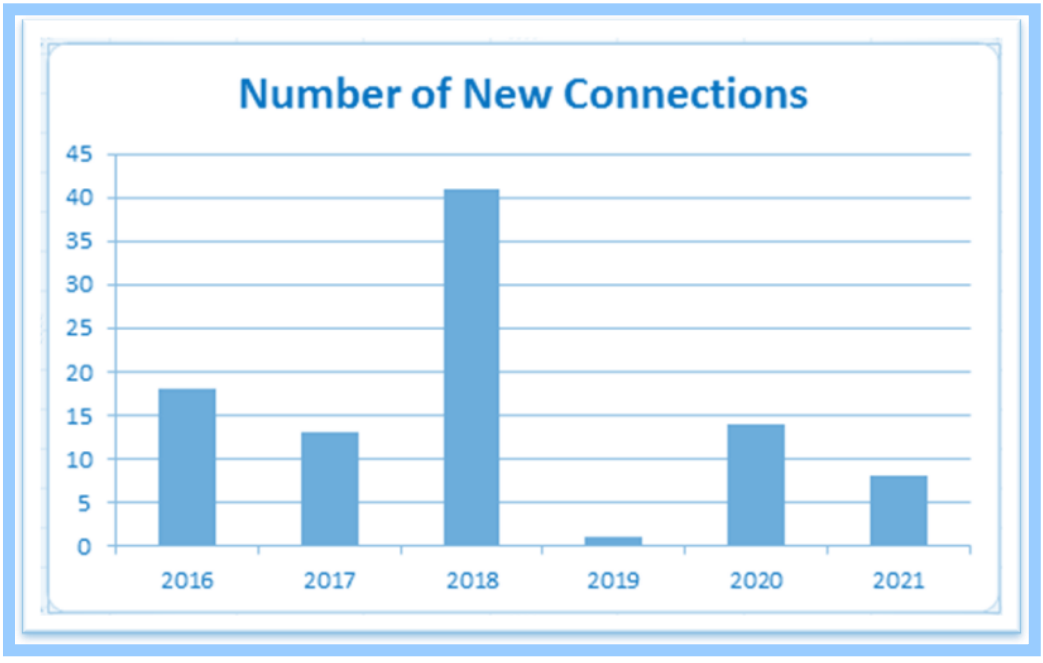
**Electricity emissions (205 lbs CO_2e) offset by Acton Power Choice Green*

Connection Trends

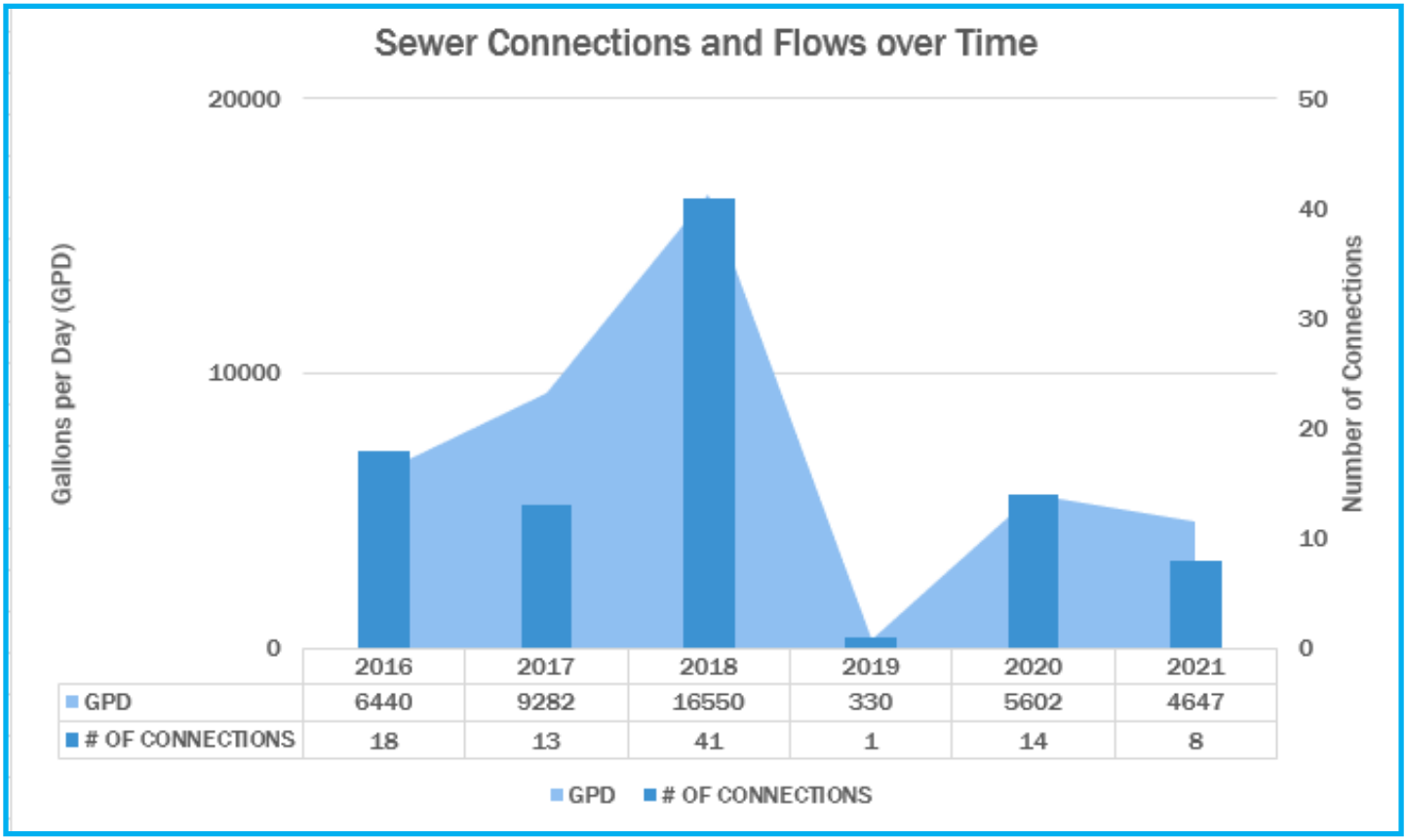


As shown, the number of sewer connections has leveled in recent years.

The number of annual sewer connections alone is not always a clear measure of increasing sewer volumes. A single connection to sewer could represent a single family home or an entire apartment building.



Sewer Connections v. Flows



This figure charts increases in flows and connections as customers have connected to sewer between 2016 and 2021. As shown, flows have increased as customers have connected, but the increase in flow does not correlate exactly to the number of connections. As properties are subdivided or multi-unit buildings are constructed, a single connection could equal combined flows for multiple customers.

Sewer Capacity

The Wastewater Treatment Facility's (WWTF) gallons per day (GPD) capacity is set and monitored by the Massachusetts Department of Environmental Protection. The WWTF currently employs 6 rapid infiltration beds (RIBS) with a permitted capacity of 299,000 GPD.

Capacity limit is based on the average number of bedrooms in the service area with approximately 110 gallons allotted per bedroom daily

Capacity can be increased through addition of:

- RIBS
- Equalization tanks

Engineering studies are currently underway to investigate options to increase capacity and accommodate future sewer connections.